

REMARKS

Reconsideration of this Application is respectfully requested. Applicants have addressed every objection and ground for rejection stated in the final Office Action mailed April 9, 2004, Paper No. 31, and believe the Application is now in condition for allowance.

1. Statement of the Case and Status of the Claims.

The present invention provides a novel electrode active material, as well as electrodes and batteries containing the same. The material has the nominal formula $\text{LiFe}_{1-y}\text{Mg}_y\text{O}_4$, wherein $0 < y < 1$.

Claims 179 - 227 are currently pending in the present Application.

Currently, Claims 179 - 186 stand rejected under 35 U.S.C. §102(b) as being anticipated by Ni et al., "Triphylite-lithiophilite Series in China" Inst. Miner. Deposits; Chin. Acad. Sci.; Peop. Rep. China; Yanshi Kuangwuxue Zazhi (1989); vol. 8(2); pp. 144-155 ("Ni article"). Claims 179 - 227 stand rejected under 35 U.S.C. §103(a) as being obvious in view of U.S. Patent No. 6,514,640 to Armand et al. ("Armand '640"). Finally, Claims 179 - 227 stand rejected under the judicially created doctrine of obviousness-type double patenting, as being unpatentable over U.S. Patent No. 6,716,372 and (provisionally) U.S. Application Serial No. 10/092,317.

2. Information Disclosure Statements

Applicants, through Applicants' counsel, submitted Information Disclosure Statements on September 7, 2001 and October 11, 2001. Applicants resubmitted copies of these two Information Disclosure Statements on July 18, 2003, because it was not clear from the record, at that time, whether these Information Disclosure Statements were formally entered. During the personal interview conducted on March 31, 2003 and again in Applicants' Amendment submitted October 17, 2003, Applicants requested that these Information Disclosure Statements be considered and made of record in the present Application.

Accompanying the present final Office Action, the Examiner provided Applicants with an initialed copy of the Form PTO-1449 that accompanied the September 7, 2001 Information Disclosure Statement. Applicants thank the Examiner for her consideration of the references cited therein. However, Applicants respectfully request confirmation that Foreign Patent

Document No. 4 was considered. In addition, Foreign Patent Document Nos. 1, 3 and 5 were crossed out; Applicants respectfully request the Examiner's reasons for doing so.

While the final Office Action partially addressed the Information Disclosure Statement of September 7, 2001, there is still no indication that the Information Disclosure Statement of October 11, 2001 has been considered. Applicants request that the Information Disclosure Statement originally submitted on October 11, 2001 and resubmitted on July 18, 2003 be considered and made of record in the present Application.

3. Double Patenting Rejection

Claims 179 - 227 stand rejected under the judicially created doctrine of obviousness-type double patenting, as being unpatentable over U.S. Patent No. 6,716,372 to Barker et al. (Barker '372). In accordance with 37 C.F.R. §1.130(b), Applicants have submitted herewith a terminal disclaimer under 37 C.F.R. §1.321 disclaiming that portion of the term of a patent issuing from the present Application, that extends beyond the term of the '372 Barker patent.

In addition, Claims 179 - 227 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting, as being unpatentable over U.S. Serial No. 10/092,317 ('317 Application). Applicants respectfully note that the Claims in the present Application do not recite active materials of the formula " $\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4$ where M is Be, Ca, Sr, Ba." Instead, Applicants' Claims recite active materials of the formula $\text{Li}_x\text{Fe}_{1-y}\text{Mg}_y\text{PO}_4$.

In deeming Claims 179-227 unpatentable over the '317 Application, the Examiner has not specified which Claims recited in the '317 Application the Examiner considered when forming the rejection. Accordingly it is unknown whether the Examiner considered the Claims presented in the published '317 Application, or whether the Examiner reviewed the Claims currently pending in the '317 Application. Applicants submit that the pending Claims of the '317 Application (See, Applicants' Amendment submitted December 9, 2003 in the '317 Application) are distinct from the Claims of the present Application. Accordingly, Applicants request withdrawal of the Examiner's obviousness-type double patenting rejection.

4. Ni Article

Claims 179 - 186 stand rejected under 35 U.S.C. §102(b) as being anticipated by Ni et al., "Triphylite-lithiophilite Series in China" Inst. Miner. Deposits; Chin. Acad. Geol. Sci.; P op. Rep. China; Yanshi Kuangwuxue Zazhi (1989); vol. 8(2); pp. 144-155 ("Ni article").

In the previous Office Action, the Examiner asserted that the Ni article discloses compounds of the form $\text{LiFe}_{1-y}\text{M}_y\text{PO}_4$, where M is Mg or Ca. The Examiner acknowledged that the Ni article describes minerals having the chemical composition of triphylite-lithiophilite, wherein besides the major constituents Fe^{2+} and Mn^{2+} , the cations at the octahedral M(2) sites in the mineral contains Mg^{2+} , Ca^{2+} and/or Fe^{3+} .

In contrast, Applicants' claim an electrode active material represented by the nonnal formula:



wherein $0 < y < 1$. Applicants' claimed compound does not contain Fe^{2+} and Mn^{2+} . Rather, Applicants claim, among other things, a compound containing Fe^{2+} in combination with Mg.

The Examiner has asserted in the present Office Action that the phase diagrams of Figure 1 of the Ni article "are understood to disclose the compounds at the ends of the series of compounds." Applicants submit that the data points plotted in phase diagrams a, b and c of Figure 1 (wherein the molar concentrations of Ca and Mg are charted as a function of the molar concentrations of both Fe and Mn in the triphylite-lithiophilite material), represent a summary of Samples 1 - 26 of Table 1. Applicants submit that Table 1, in combination with Figure 1, only teach minerals having the chemical composition of triphylite-lithiophilite, having at least the major constituents Fe^{2+} and Mn^{2+} . Accordingly, Applicants submit the Ni article does not teach or suggest the active material claimed in Claims 179-186, and therefore can not anticipate, under 35 U.S.C. §102(b), Applicant's claimed electrode active material of Claims 179-186.

5. U.S. Patent No. 6,514,640 to Armand et al.

Claims 179 - 227 stand rejected under 35 U.S.C. §103(a) as being obvious in view of U.S. Patent No. 6,514,640 to Armand et al. ("Armand '640"). Applicants submit that the claimed $\text{LiFe}_{1-y}\text{Mg}_y\text{PO}_4$ species is not obvious in view of the teachings of the Armand '640 patent.